Fermilab

RFSYS: AN INVENTORY CODE FOR RF SYSTEM

PARAMETERS

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RFSYS USER'S GUIDE

CONTENTS

I. INTRODUCTION

RFSYS is a program which maintains an inventory of rf system parameters associated with the 200 Mev Linear Accelerator at Fermi National Accelerator Laboratory. The program, written by Elliott Treadwell, of the Linac group, offers five modes of operation:

(1) Allocates memory space for additional rf systems (data arrays).

(2) Prints a total or partial list of "old" tube parameters on an ADM-3 terminal.

(3) Changes tube data stored in the master array. If the number of systems increases, this mode permits the user to enter new data.

(4) Computes the average time of operation for a given tube and system.

(5) Stops program execution. There is an exit option, (a) create one output data file or (b) create three output files, one of which contains column headers and coded comments.

All output files are stored on the CYBER-175 disc, and eventually on high density (6250 B.P.I.) magnetic tapes. This arrangement eliminates the necessity for online data buffers.

II. THE PROGRAM

Five modules in RFSYS control program execution, data processing and mass storage. See the flow chart in Figure 1. for reference. Execution begins at the branch point ,CHOICES, where the user chooses one of five operations: Increase array space for "new" systems, Print old data on the CRT, Change array elements, Calculate the average operation time of tubes, and the exit option. We descirbe these modules with more detail in the next five sections.

ALLOCATE ARRAY SPACE

Subroutine TUBEMAP surveys data in RFSYS and returns the variable NSYS, the current number of systems. If the user decides to increase NSYS, the new value must satisfy the relation

$NSYS2 \geq NSYS1$ (where 2 represents new, 1 old).
Failure at this stage of execution, forces the user to enter a new NSYS and reenter the branch point CHOICES.

PRINT DATA LISTS ON CRT

RFSYS can print data of N tubes organized in nine categories. The user supplies N and the system number, then the program returns the first N tubes of this system along with data written in nine categories: (1) Schematic number, (2) Manufacturer's number, (3) Serial number, (4) System number, (5) Total hours of operation, (6) Coded comments, (7) Run time meter, (8) Tube cost, and the (9) Date of last change.

CHANGE DATA ARRAYS

Mode three is the largest section in RFSYS. All tube parameters are created and altered in this unit. Initially the user must input the system number and schematic number. The program responds with a list of nine parameters associated with the tube, and requests the user to identify the parameter to be changed (see Figure 1.). Note, a list of the nine parameters and their meaning preceeds the request; however further passes through this branch will suppress the message.

The user can repeat mode three or can return to CHOICES with the following commands: enter a system number, carriage return, then enter any single alphabetical character, and carriage return.

CALCULATE RUN-TIME AVERAGES

Subroutine AVERAGE calculates the expected time of operation for a particular type of tube. The user inputs the total number of data and then each datum. RFSYS prints the complete input list and answer. Often input lists exceed the twenty-four lines per page (limit on the CRT). A single carriage return will continue the print.

EXIT OPTION

The user must be cautioned that once one enters the exit mode THERE IS NO RETURN TO CHOICES. Frequently the user does not want duplicate out files. RFSYS has two exit modes which are set when the job begins. If the user makes several runs to input data and does not want duplicate files (output), then the job begins with the commands "-,RFSOOM, RFSOON, 0 " carriage return. The run procedure RFCCL inputs file RFSOOM and does not output RFSOON. All changes to the input file are copied into RFSOOM. Note, the parameter IFLAG was set equal to 0. If the user desires an output file of changed data and a listing of that file, then the following commands are typed "-,RFSOOM, RFSOON, 1 " carriage return. The program creates output files RFSOON, TAPE5 (a copy of RFSOON with coded comments and column headers), and TAPE4 (a duplicate of RFSOON). The next run which has IFLAG 1, would use RFSOON as input and RFSOOO as output.

III. LOGIN PROCEDURE

An ADM-3 terminal is used to run the RFSYS program interactively. The monitor, when inactive for some time, will display FERMILAB: DISCONNECTED. See the procedure in Table 1. for the login procedure.

Press the carriage return key CR , the CRT will display FERMILAB: *. Enter the number 1, then press the CR key. The momitor will show GO, signalling the computer is ready for a command. Sometimes the monitor displays WAIT. Other users on the CYBER IAF system are logged on and sharing time; therefore the user should respond to WAIT with the letter Y CR . BE PATIENT. Eventually the computer will log you onto the system and return GO. Press CR three times and wait for the response USERNAME: *. Enter *** and press CR . The system responds with RECOVER/CHARGE: Enter CHARGE,**. You will receive a prompt /.

Now that you have properly logged onto the IAF system, enter -,LOG and CR . The permanent files in area ** are listed, a set of indirect access files and direct access files. The CRT then will respond $REVERT.CCL. Enter -,RFCCL,RFS00M,RFS00N,I then CR .[1] You have entered execution of RFSYS and the five program options are listed. Have fun.

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[1]
See section II for description of the IFLAG parameter (I). The parameter is set either to 1 or 0 depending on the desired output mode.

TABLE I

MONITOR DISPLAY	MONITOR COMMANDS
FERMILAB: DISCONNECTED	enter CR
FERMILAB:	enter 1 CR
GO	enter CR three times
USERNAME:	enter ** , ** then CR
RECOVER/CHARGE:	enter CHARGE, ** then CR
$CHARGE, **	
/	enter -,LOG then CR
CATALOG OF ***	
$REVERT.CCL	enter -,RFCCL,RFS00M,RFS00N,I then CR

5.

-,rfccl,rfs001,rfs002,0

RFSYS CAN EXECUTE FIVE DIFFERENT OPERATIONS
(1) ALLOCATE SPACE FOR A NEW SYSTEM OF RF TUBES
(2) PRINT OLD PARAMETERS [TOTAL OR PARTIAL LIST]
(3) CHANGE PARAMETERS
(4) COMPUTE TIME-AVERAGES FOR TUBE OPERATIONS, AND
(5) STOP PROGRAM EXECUTION.

   *CHOOSE AN OPTION: ICHOICE=
? 1
   THE CURRENT NUMBER OF RF SYSTEMS...15
   *ENTER (C) TO CHANGE NUMBER; (P) TO PASS...
? p

   *CHOOSE AN OPTION: ICHOICE=
? 2

   *ENTER (Y)=YES OR (N)=NO TO VIEW DATA...
? y
   *ENTER (M1,M2) TO PRINT DATA ON M1 TUBES IN THE
   M2 SYSTEM [0<M<21]...
? 2,1

SC/N	M/N	S/N	RFS	THRS	COMM	RTM	COST
A11A1V2	7651	C-1989-AP	1.	2585.0	********	96527.0	0.
A11A1V3	4616	K8007R3	1.	284.0	N	96862.0	6000.

   *ENTER (Y)=YES OR (N)=NO TO VIEW DATA...
? n

   *CHOOSE AN OPTION: ICHOICE=
? 3
 TUBE PARAMETERS ARE STORED IN NINE COLUMNS.
 HEADERS FOR THE NINE COLUMNS ARE DEFINED BELOW
 (1) SC/N : SCHEMATIC NUMBER
 (2) M/N : MANUFACTURER' NUMBER
 (3) S/N : SERIAL NUMBER
 (4) RFS : THE RF-SYSTEM NUMBER
 (5) THRS : TOTAL HOURS OF OPERATION
 (6) COMM : CODED COMMENTS
 (7) RTM : REAL TIME METER
 (8) COST : SELF EXPLANITORY
 (9) DATE : DATE OF LAST CHANGE

   *ENTER THE SYSTEM NUMBER, RETURN, AND THEN ENTER
   THE SCHEMATIC NUMBER...
? 1
? a11a1v3

SC/N	M/N	S/N	RFS	THRS	COMM	RTM	COST
A11A1V3	4616	K8007R3	1.	284.0	N	96862.0	6000.

   *ENTER COLUMN NUMBER....
? 4

   *ENTER NEW PARAMETER-VALUE...
? 1.

SC/N	M/N	S/N	RFS	THRS	COMM	RTM	COST
A11A1V3	4616	K8007R3	1.	284.0	N	96862.0	6000.

8.

V. ACKNOWLEDGEMENTS

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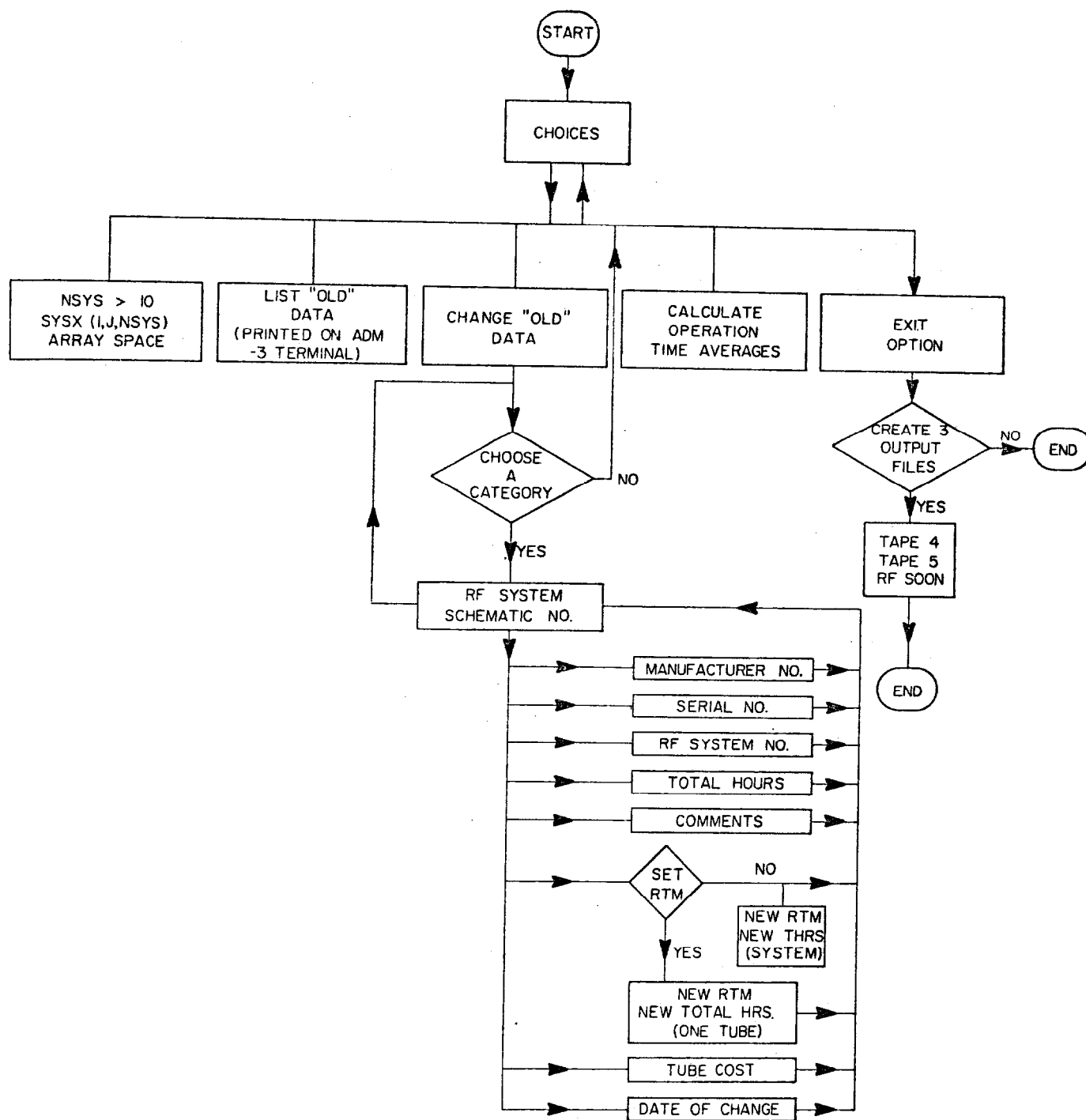
FIGURE 1.